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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,680	12/05/2003	Ivan Jesus Fernandez-Corbaton	030319	9070

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2683	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/728,680	FERNANDEZ-CORBATON ET AL.	
	Examiner	Art Unit	
	Muthuswamy G. Manoharan	2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _05 December 2003_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-36_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-36_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _05 December 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _4/16/2004_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Specification

The disclosure is objected to because of the following informalities: The meaning of the term e_v in equations 9, 11 and 12 is not explained.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8,15,25 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 8,15 and 32, the recitation of "the parameter θ describes a training algorithm used to train a receiver at the remote station" is unclear. It is not clear, how θ could describe a training algorithm since $\theta = \frac{L-1}{n}$ (equation 7 in the specification) is just a parameter. Also the recitation of "the vector θ describes the type of training algorithms used" (Paragraph [0080], line 4) is not consistent with the equation 7, where $\theta = \frac{L-1}{n}$ is a parameter. Clarification and/or correction are required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,3,4,5,6,11-13,18,20-23,28-30, and 35-36 are rejected under 35 U.S.C. 102(e) as being unpatentable over Yavuz et al. (hereinafter Yavuz) (US 2003/0123406).

Regarding claim 1, Yavuz teaches a base station (Paragraph [0024], line 8) that adaptively allocates (paragraph [0025], line 14) at least one resource between a traffic signal and a dedicated reference signal (Paragraph [0023], lines 1-6), comprising: means for receiving a quality metric from a remote station, wherein the quality metric indicates the quality of a signal transmitted from the base station and received by the remote station (Paragraph [0024], lines 1-9); means for using the quality metric to allocate a resource between the traffic signal and the dedicated reference signal (Paragraph [0027], lines 19-23); and means for transmitting the dedicated reference signal and the traffic signal to the remote station (Paragraph [0031], lines 1-6).

Regarding claim 3, Yavuz teaches the base station of claim 1, wherein the resource comprises a time slot in a time- division multiplexed signal (Paragraph [0027], line 18).

Regarding claim 4, Yavuz teaches the base station of claim 1, further comprising means for transmitting a common reference signal to the remote station and to a plurality of other remote stations (Paragraph [0006], lines 4-7).

Regarding claim 5, Yavuz teaches the base station of claim 4, wherein the quality metric comprises a signal-to- interference-and-noise ratio of the common reference signal received at the remote station (Paragraph [0008], lines 5-10; Paragraph [0025], lines 13-16).

Regarding claim 6, Yavuz teaches the base station of claim 4, wherein the quality metric comprises a symbol error rate of the common reference signal received at the remote station (Paragraph [0027], line 9).

Regarding claim 11, Yavuz teaches a remote station (items 8a, 8b, 8c, 8d, 8e in Figure 1) that adaptively allocates (paragraph [0025], line 14) at least one resource between a traffic signal and a dedicated reference signal (Paragraph [0023], lines 1-6), comprising: means for receiving a common reference signal, a dedicated reference signal, and a traffic signal from a base station (Paragraph [0023], lines 1-6); means for determining a quality metric of the received common reference signal (Paragraph [0024], lines 1-9); means for transmitting the quality metric to the base station, wherein the base station uses the quality metric to allocate a resource between the dedicated reference signal and the traffic signal (Paragraph [0027], lines 19-23); and means for using the received common reference signal and the received dedicated reference signal to train a receiver at the remote station (Paragraph [0023], lines 7-10).

Regarding claim 12, Yavuz teaches the remote station of claim 11, wherein the quality metric comprises a signal-to- interference-and-noise ratio of the received common reference signal (Paragraph [0008], lines 5-10; Paragraph [0025], lines 13-16).

Regarding claim 13, Yavuz teaches the remote station of claim 11, wherein the quality metric comprises a symbol error rate of the received common reference signal (Paragraph [0027], line 9).

Regarding claim 18, Yavuz teaches a base station (Paragraph [0024], line 8) that adaptively allocates (paragraph [0025], line 14) at least one resource between a traffic signal and a dedicated reference signal (Paragraph [0023], lines 1-6), comprising: a receiver that receives a quality metric from a remote station, wherein the quality metric indicates the quality of a signal transmitted from the base station and received by the remote station (Paragraph [0024], lines 1-9); a resource allocation component that uses the quality metric to allocate a resource between the traffic signal and the dedicated reference signal (Paragraph [0027], lines 19-23); and a transmitter that transmits the traffic signal and the dedicated reference signal to the remote station (Paragraph [0031], lines 1-6).

Regarding claim 20, Yavuz teaches the base station of claim 18, wherein the resource comprises a time slot in a time- division multiplexed signal (Paragraph [0027], line 18).

Regarding claim 21, Yavuz teaches the base station of claim 18, further comprising means for transmitting a common reference signal to the remote station and to a plurality of other remote stations (Paragraph [0006], lines 4-7).

Regarding claim 22, Yavuz teaches the base station of claim 21, wherein the quality metric comprises a signal-to- interference-and-noise ratio of the common

reference signal received at the remote station (Paragraph [0008], lines 5-10; Paragraph [0025], lines 13-16).

Regarding claim 23, Yavuz teaches the base station of claim 21, wherein the quality metric comprises a symbol error rate of the common reference signal received at the remote station (Paragraph [0008], lines 5-10; Paragraph [0025], lines 13-16).

Regarding claim 28, Yavuz teaches a remote station (items 8a, 8b, 8c, 8d, 8e in Figure 1) configured to facilitate adaptive allocation (paragraph [0025], line 14) of at least one resource between a traffic signal and a dedicated reference signal (Paragraph [0023], lines 1-6), the remote station comprising: a receiver that receives a common reference signal, a dedicated reference signal, and a traffic signal from a base station (Paragraph [0023], lines 1-6); a signal quality measurement component that determines a quality metric of the received common reference signal (Paragraph [0024], lines 1-9); a transmitter that transmits the quality metric to the base station, wherein the base station uses the quality metric to allocate a resource between the dedicated reference signal and the traffic signal (Paragraph [0027], lines 19-23); and a training component that uses the received common reference signal and the received dedicated reference signal to train the receiver (Paragraph [0031], lines 1-6).

Regarding claim 29, Yavuz teaches the remote station of claim 28, wherein the quality metric comprises a signal-to- interference-and-noise ratio of the received common reference signal (Paragraph [0008], lines 5-10; Paragraph [0025], lines 13-16).

Regarding claim 30, Yavuz teaches the remote station of claim 28, wherein the quality metric comprises a symbol error rate of the received common reference signal (Paragraph [0027], line 9).

Regarding claim 35, Yavuz teaches in a base station, a method for adaptively allocating (paragraph [0025], line 14) at least one resource between a traffic signal and a dedicated reference signal (Paragraph [0023], lines 1-6), comprising: receiving a quality metric from a remote station, wherein the quality metric indicates the quality of a signal transmitted from the base station and received by the remote station (Paragraph [0024], lines 1-9); using the quality metric to allocate a resource between the traffic signal and the dedicated reference signal (Paragraph [0027], lines 19-23); and transmitting the dedicated reference signal and the traffic signal to the remote station (Paragraph [0031], lines 1-6).

Regarding claim 36, Yavuz teaches in a remote station, a method for facilitating adaptive allocation (paragraph [0025], line 14) of at least one resource between a traffic signal and a dedicated reference signal (Paragraph [0023], lines 1-6), comprising: receiving a common reference signal, a dedicated reference signal, and a traffic signal from a base station (Paragraph [0031], lines 1-6); determining a quality metric of the received common reference signal (Paragraph [0024], lines 1-9); transmitting the quality metric to the base station, wherein the base station uses the quality metric to allocate a resource between the dedicated reference signal and the traffic signal (Paragraph [0027], lines 19-23); and using the received common reference signal and the received

dedicated reference signal to train a receiver at the remote station (Paragraph [0031], lines 1-6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yavuz et al. (hereinafter Yavuz) (US 2003/0123406) in view of Haim (US 2002/0102944).

Regarding claim 2(19), Yavuz discloses all the particulars of the claim except, wherein the resource comprises power. However, Haim teaches in an analogus art, the base station of claim 1(18), wherein the resource comprises power (Abstract, lines 6-14). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have the base station of claim 1(18), wherein the resource comprises power. This modification helps in controlling the multiple access interference.

Claims 7,8,14,15,24,25,31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yavuz et al. (hereinafter Yavuz) (US 2003/0123406) in view of Farlow (WO 02/13448 A2).

Regarding claims 7,14,24 and 31, Yavuz discloses all the particulars of the claim except for means for transmitting a parameter e_x to the remote station, wherein the

parameter e_x represents the portion of the resource allocated to the dedicated reference signal. However, Farlow teaches in an analogous art, means for transmitting a parameter e_x to the remote station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal (Page 20, lines 20-25). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have means for transmitting a parameter e_x to the remote station, wherein the parameter e_x represents the portion of the resource allocated to the dedicated reference signal. This modification provides a method and system of power control adaption for data rate changes resulting in more optimal performance.

Regarding claims 8,15,25, and 32, Yavuz discloses all the particulars of the claim except for transmitting a parameter θ to the base station, wherein the parameter θ describes a training algorithm used to train receiver at the remote station. However, Farlow discloses in an analogous art transmitting a parameter to the base station, wherein the parameter θ describes a training algorithm (Page 9, lines 20-24) used to train receiver at the remote station. Therefore, it would be obvious to one of ordinary skill in the art at the time invention to transmit a parameter θ to the base station, wherein the parameter θ describes a training algorithm used to train receiver at the remote station. This modification is useful in estimating channel conditions and thus reducing the signal distortion introduced by the channel.

Claims 9,10,16,17,26,27,33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yavuz et al. (hereinafter Yavuz) (US 2003/0123406) in view of Frank (US 6,904,081).

Regarding claim 9, Yavuz discloses all the particulars of the claim except means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal; and means for receiving a parameter $\frac{L-1}{n}$ from the remote station. However Frank teaches in an analogous art, means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal (Col. 4, lines 34-59); and means for receiving a parameter $\frac{L-1}{n}$ from the remote station. Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have the base station of claim 1, further comprising: means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal; and means for receiving a parameter $\frac{L-1}{n}$ from the remote station. This modification is useful in estimating channel conditions and thus reducing the signal distortion introduced by the channel.

Regarding claim 10, Yavuz discloses all the particulars of the claim except means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal; and means for agreeing with the remopte station about a fixed value for the parameter $\frac{L-1}{n}$. However

Frank teaches in an analogous art, means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal; and means for agreeing with the remote station about a fixed value for the parameter $\frac{L-1}{n}$ (Col. 4, lines 34-59). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have the base station of claim 1, further comprising: means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal; and means for agreeing with the remote station about a fixed value for the parameter $\frac{L-1}{n}$. This modification is useful in estimating channel conditions and thus reducing the signal distortion introduced by the channel.

Regarding claim 16, Yavuz discloses all the particulars of the claim except means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal; and means for transmitting a parameter $\frac{L-1}{n}$ to the base station. However Frank teaches in an analogous art, means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal (Col. 4, lines 34-59); and means for transmitting a parameter $\frac{L-1}{n}$ to the base station. Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have the base station of 11, further comprising: means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the

common reference signal; and means for transmitting a parameter $\frac{L-1}{n}$ from the base station. This modification is useful in estimating channel conditions and thus reducing the signal distortion introduced by the channel.

Regarding claim 17, Yavuz discloses all the particulars of the claim except means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal; and means for agreeing with the base station about a fixed value for the parameter $\frac{L-1}{n}$. However Frank teaches in an analogous art, means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal; and means for agreeing with the base station about a fixed value for the parameter $\frac{L-1}{n}$ (Col. 4, lines 34-59). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have the base station of 11, further comprising: means for computing the coefficients of an L -tap linear equalizer using a least squares estimation method over n chips of the common reference signal; and means for agreeing with the base station about a fixed value for the parameter $\frac{L-1}{n}$. This modification is useful in estimating channel conditions and thus reducing the signal distortion introduced by the channel.

Regarding claims 26, Yavuz discloses all the particulars of the claim except for a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap

linear equalizer and wherein the receiver also L – 1 receives a parameter from the remote station. However Frank teaches in an analogous art, a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer and wherein the receiver also L – 1 receives a parameter from the remote station (Col. 4, lines 34-59). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer and wherein the receiver also L – 1 receives a parameter from the remote station. This modification is useful in estimating channel conditions and thus reducing the signal distortion introduced by the channel.

Regarding claims 27, Yavuz discloses all the particulars of the claim except for a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer, and wherein the base station is configured to agree with the remote station about a fixed value for the parameter $\frac{L-1}{n}$. However Frank teaches in an analogous art, a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer, and wherein the base station is configured to agree with the remote station about a fixed value for the parameter $\frac{L-1}{n}$ (Col. 4, lines 34-59). Therefore, it would be obvious to one of ordinary skill in the art at the time of

invention to have a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer, and wherein the base station is configured to agree with the remote station about a fixed value for the parameter $\frac{L-1}{n}$. This modification is useful in estimating channel conditions and thus reducing the signal distortion introduced by the channel.

Regarding claim 33, Yavuz discloses all the particulars of the claim except for a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer and wherein the transmitter also transmits a parameter $\frac{L-1}{n}$ from the remote station. However Frank teaches in an analogous art, a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer and wherein the transmitter also transmits a parameter $\frac{L-1}{n}$ from the remote station (Col. 4, lines 34-59). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer and wherein the transmitter also transmits a parameter $\frac{L-1}{n}$ from the remote station. This modification is useful in estimating channel conditions and thus reducing the signal distortion introduced by the channel.

Regarding claim 34, Yavuz discloses all the particulars of the claim except for a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer, and wherein the remote station is configured to agree with the base station about a fixed value for the parameter $\frac{L-1}{n}$. However Frank teaches in an analogous art, a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer, and wherein the remote station is configured to agree with the base station about a fixed value for the parameter $\frac{L-1}{n}$ (Col. 4, lines 34-59). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have a training component at the remote station employs a least squares estimation method over n chips of the common reference signal to compute the coefficients of an L -tap linear equalizer and wherein the remote station is configured to agree with the base station about a fixed value for the parameter $\frac{L-1}{n}$. This modification is useful in estimating channel conditions and thus reducing the signal distortion introduced by the channel.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Jepsen et al. (US 6,724,815) discloses adaptive training sequence (Col. 6, lines 44-47), quality metric (Col. 5, lines 24-28), symbol error rate(Col. 5, lines 36), TDMA (Col. 7, line 6).

Malkamaki et al. (US 5,479,444) discloses adaptive training sequence (Col. 5, lines 29-60).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Muthuswamy G. Manoharan whose telephone number is 571-272-5515. The examiner can normally be reached on 7:30AM-4: 30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WLT

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